

Food of the Stone marten (*Martes foina*) in Nietoperek Bat Reserve

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Earlier sporadic studies on the food of the stone marten carried out in the 'Nietoperek' Bat Reserve created for preservation of bats suggested that bats could be the main component of the stone marten's diet (URBAŃCZYK 1981; LESIŃSKI and ROMANOWSKI 1988). This report presents the results of an analysis of stone marten faeces from 'Nietoperek' and is an attempt to answer the question whether stone marten can limit the number of bats in the reserve.

Faecal samples were collected in underground fortifications, which are an ideal place for the hibernation of bats. More than 20,000 of bats belonging to 12 species regularly hibernate in the passages. The most numerous are *Myotis daubentoni* (12,500 individuals) and *M. myotis* (5,000 ind.). The species diversity and the number of bats are unusually high for Europe (URBAŃCZYK 1990).

The study of the stone marten diet is based on the analysis of 88 scats collected in March 1995 and March 1996. Prey was identified on the basis of bony remains and microscopic characteristics of hair. The prey biomass has been calculated using the coefficients of digestability according to LOCKIE (1961) and GOSZCZYŃSKI (1976): 118 for Cervidae carcass, 23 for small mammals (including bats), 35 for birds, 14 and 5 for fruits and insects, respectively. Food composition was expressed both in percent of biomass consumed and the percent of occurrence in scats, as the combination of these two measures provides a comprehensive view.

Results of the study are presented in table 1. The food of the stone marten from 'Nietoperek' is very diverse in regard to its quality.

Bats have been found in the food only three times (once *Plecotus auritus* and twice unidentified individuals). Both URBAŃCZYK (1981) and LESIŃSKI and ROMANOWSKI (1988) observed a much greater amount of bats in the diet of stone marten in 'Nietoperek', even up to 81.3% of the dry food mass. Apart from 'Nietoperek' the stone marten preys on bats only sporadically and only one case of eating bats by marten is known for Romania (ROMANOWSKI and LESIŃSKI 1991). Having made use of the two data gathered by the present author, as well as those of LESIŃSKI and ROMANOWSKI (1988) and URBAŃCZYK (1981) one could state that the stone marten does not chose its preys at random (Tab. 2) – $\chi^2 = 532.5$ ($p < 0.0001$). The most numerous species – the Daubenton's bat *Myotis daubentoni* (URBAŃCZYK 1990), was not killed at all. The large amount of barbastelle bat *Barbastella barbastellus* could result from the fact that this species hibernates at the lowest level just above the ground and on the underground walls (URBAŃCZYK 1992) thus being the easiest prey.

The amount of the prey's rest is similar to the results presented by other authors (see review in GOSZCZYŃSKI 1977; SUMIŃSKI et al. 1993; CLEVINGER 1994; LODE 1994). Furthermore, the relatively high amount of fruits (wild rose, hawthorn, cherries, apples, berries) proves that the undergrounds are used by the stone marten at least since autumn. Percen-

Table 1. Food composition of the stone marten in 'Nietoperek' reserve. N = 226 prey item.

| Item | % Occurrence | % Biomass |
|----------------------|--------------|-----------|
| <i>Microtus</i> spp. | 5.7 | 4.8 |
| Rodents indet. | 23.9 | 13.1 |
| <i>Sorex</i> spp. | 6.8 | 2.3 |
| Chiroptera | 3.4 | 6.2 |
| Cervidae carcass | 8 | 9.2 |
| Aves | 2.3 | 3.1 |
| Insecta indet. | 2.3 | 0.2 |
| Grass | 6.8 | 1.9 |
| Seeds and fruits | 71.6 | 58.8 |
| Nonorganic matter | 4.6 | 0.4 |

Table 2. Bat species found in marten food (data from URBAŃCZYK 1981, LESIŃSKI and ROMANOWSKI 1988, this study – compiled) Explanations: N.win. – numbers of individuals wintering in "Nietoperek" reserve N.f. – numbers of individuals in marten food.

| Species | N.win. | N.f. |
|---------------------------------|--------|------|
| <i>Myotis myotis</i> | 5 000 | 33 |
| <i>Barbastella barbastellus</i> | 1 000 | 123 |
| <i>Plecotus auritus</i> | 800 | 2 |
| <i>Myotis nattereri</i> | 350 | 1 |

tage of fruit occurrence is similar to the data obtained from the Mediterranean habitats (PANDOLFI et al. 1996). Data collected there point to a polyphagous character of the stone marten diet. The obtained data clearly show, however, that the stone marten poss a threat to bats' population.

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